1905MNRAS..65..304C

Ephemeris for Physical Observations

Greenwich Mean Noon.		P.	L−O.	B.	Equat. Diam.	Excess over Polar.	Defect of Illum.	Q.	d.
1905.		°	°	°	"	"	"	°	°
June	8	344·35	275·81	+2·97	33·94	2·19	0·06	253·06	5·06
	13	344·75	276·93	2·98	34·14	2·20	·08	253·67	5·72
	18	345·14	278·02	2·99	34·36	2·21	·10	254·25	6·36
	23	345·54	279·09	3·00	34·61	2·23	·13	254·77	6·98
	28	345·93	280·14	3·01	34·90	2·25	·15	255·27	7·58
July	3	346·32	281·17	3·02	35·21	2·27	·18	255·75	8·15
	8	346·69	282·17	3·03	35·54	2·29	·20	256·21	8·69
	13	347·05	283·12	3·04	35·91	2·31	·23	256·64	9·19
	18	347·41	284·03	3·04	36·31	2·34	·25	257·05	9·66
	23	347·75	284·90	3·05	36·74	2·37	·28	257·45	10·08
	28	348·09	285·74	3·06	37·19	2·40	·31	257·83	10·46
Aug.	2	348·41	286·53	3·06	37·67	2·43	·33	258·19	10·79
	7	348·71	287·26	3·07	38·18	2·46	·35	258·53	11·08
	12	348·99	287·94	3·08	38·72	2·49	·37	258·86	11·31
	17	349·24	288·56	3·09	39·29	2·53	·39	259·16	11·48
	22	349·47	289·12	3·10	39·88	2·57	·41	259·44	11·59
	27	349·67	289·61	3·11	40·49	2·61	·41	259·70	11·63
Sept.	1	349·84	290·03	3·12	41·13	2·65	·42	259·93	11·60
	6	349·99	290·37	3·13	41·78	2·69	·42	260·14	11·50
	11	350·11	290·64	3·13	42·45	2·74	·41	260·33	11·32
	16	350·20	290·85	3·14	43·12	2·78	·40	260·49	11·08
	21	350·25	290·97	3·15	43·80	2·82	·38	260·63	10·74
	26	350·25	290·99	3·16	44·48	2·86	·36	260·74	10·32
Oct.	1	350·23	290·93	3·16	45·15	2·91	·33	260·84	9·84
	6	350·18	290·80	3·17	45·80	2·95	·30	260·93	9·27
	11	350·08	290·58	3·17	46·42	2·99	·26	261·00	8·59
	16	349·95	290·27	3·18	47·02	3·03	·22	261·07	7·83
	21	349·79	289·89	3·18	47·57	3·07	·18	261·15	7·00
	26	349·61	289·44	3·18	48·05	3·10	·14	261·27	6·11
	31	349·40	288·93	3·18	48·47	3·12	·10	261·50	5·16
Nov.	5	349·17	288·36	3·18	48·84	3·14	·07	261·88	4·15
	10	348·92	287·75	3·18	49·11	3·16	·04	262·63	3·09
	15	348·65	287·10	3·17	49·30	3·17	·01	264·47	2·00
	20	348·37	286·42	3·16	49·39	3·17	·00	271·40	0·89
	25	348·09	285·74	3·15	49·39	3·18	·00	40·57	0·32
	30	347·82	285·06	+3·14	49·29	3·17	0·01	70·10	1·39

1905MNRAS..65..304C

of Jupiter, 1905–6. By A. C. D. Crommelin.

Greenwich Mean Noon. 1905.		Light Time. m	Longitude of Central Meridian. I. 877°·90.	II. 870°·27.	Corr. for Phase. °	A – O. °	*B.* °
June	8	48·945	296·85	293·56	+0·11	270·75	+3·07
	13	48·663	5·40	323·96	·14	271·21	3·07
	18	48·345	74·00	354·41	·18	271·66	3·07
	23	47·993	142·64	24·90	·21	272·11	3·07
	28	47·606	211·33	55·44	·25	272·56	3·07
July	3	47·186	280·05	86·01	·29	273·02	3·06
	8	46·737	348·83	116·63	·33	273·48	3·06
	13	46·259	57·67	147·32	·37	273·93	3·06
	18	45·753	126·57	178·07	·41	274·37	3·06
	23	45·223	195·52	208·86	·44	274·82	3·06
	28	44·669	264·52	239·71	·48	275·28	3·06
Aug.	2	44·096	333·58	270·62	·51	275·74	3·05
	7	43·504	42·71	301·60	·54	276·18	3·05
	12	42·900	111·90	332·64	·56	276·63	3·05
	17	42·281	181·16	3·74	·57	277·08	3·04
	22	41·656	250·48	34·91	·58	277·53	3·04
	27	41·024	319·88	66·15	·59	277·98	3·04
Sept.	1	40·393	29·34	97·46	·58	278·43	3·03
	6	39·762	98·88	128·85	·57	278·87	3·03
	11	39·138	168·49	160·30	·56	279·32	3·03
	16	38·524	238·16	191·82	·54	279·77	3·02
	21	37·927	307·92	223·33	·50	280·23	3·02
	26	37·349	17·74	254·89	·46	280·67	3·02
Oct.	1	36·797	87·63	286·73	·42	281·09	3·01
	6	36·271	157·58	318·63	·37	281·53	3·01
	11	35·783	227·61	350·50	·32	281·99	3·00
	16	35·332	297·68	22·42	·27	282·44	3·00
	21	34·926	7·81	54·40	·21	282·89	2·99
	26	34·568	77·98	86·42	·16	283·33	2·99
	31	34·263	148·18	118·46	·12	283·77	2·98
Nov.	5	34·014	218·40	150·53	·07	284·22	2·97
	10	33·826	288·63	182·61	·04	284·67	2·97
	15	33·698	358·85	214·68	+ ·02	285·10	2·96
	20	33·634	69·06	246·74	·00	285·54	2·95
	25	33·634	139·25	278·78	·00	286·00	2·95
	30	33·701	209·39	310·77	+0·00	286·44	+2·94

1905MNRAS..65..304C

Greenwich Mean Noon.		P.	L–O.	B.	Equat. Diam.	Excess over Polar.	Defect of Illum.	Q.	*d*.
1905.		°	°	°	"	"	"	°	°
Dec.	5	347·56	284·40	+3·12	49·10	3·16	0·02	73·50	2·49
	10	347·32	283·77	3·10	48·82	3·14	·05	74·71	3·56
	15	347·09	283·18	3·08	48·45	3·12	·08	75·28	4·59
	20	346·88	282·64	3·06	48·01	3·09	·11	75·59	5·57
	25	346·69	282·17	3·03	47·50	3·06	·15	75·73	6·48
	30	346·53	281·76	3·01	46·93	3·02	·19	75·79	7·33
1906.									
Jan.	4	346·41	281·43	2·99	46·32	2·98	·23	75·85	8·12
	9	346·31	281·19	2·97	45·66	2·94	·27	75·95	8·80
	14	346·25	281·02	2·94	44·99	2·90	·30	76·05	9·40
	19	346·22	280·94	2·92	44·29	2·86	·33	76·16	9·93
	24	346·22	280·95	2·90	43·58	2·81	·35	76·27	10·36
	29	346·25	281·04	2·88	42·87	2·76	·37	76·39	10·71
Feb.	3	346·32	281·22	2·86	42·17	2·71	·38	76·52	10·97
	8	346·41	281·48	2·84	41·48	2·67	·39	76·68	11·15
	13	346·54	281·81	2·82	40·79	2·63	·39	76·84	11·25
	18	346·70	282·23	2·80	40·12	2·58	·39	77·02	11·28
	23	346·88	282·71	2·79	39·48	2·54	·38	77·21	11·23
	28	347·09	283·27	2·77	38·87	2·50	·37	77·44	11·12
Mar	5	347·33	283·88	2·76	38·28	2·46	·35	77·69	10·95
	10	347·60	284·56	2·74	37·72	2·42	·33	77·99	10·71
	15	347·89	285·29	2·73	37·19	2·39	·31	78·31	10·41
	20	348·20	286·08	2·71	36·69	2·36	·28	78·65	10·06
	25	348·54	286·91	2·70	36·22	2·33	·26	79·01	9·67
	30	348·89	287·78	2·69	35·78	2·30	·23	79·38	9·23
Apr.	4	349·27	288·70	2·68	35·37	2·28	·21	79·77	8·75
	9	349·66	289·65	2·66	34·99	2·25	·18	80·18	8·24
	14	350·08	290·64	2·65	34·64	2·23	·16	80·60	7·69
	19	350·51	291·65	2·64	34·33	2·21	·13	81·05	7·11
	24	350·95	292·70	2·63	34·04	2·19	·11	81·53	6·51
	29	351·41	293·77	2·61	33·78	2·17	·09	82·03	5·88
May	4	351·88	294·85	2·60	33·55	2·16	·07	82·84	5·23
July	15	359·33	311·21	2·36	33·28	2·14	·06	267·93	4·89
	20	359·83	312·29	2·34	33·47	2·15	·08	268·45	5·54
	25	0·33	313·36	2·32	33·68	2·17	·10	268·97	6·18
	30	0·82	314·40	2·29	33·92	2·18	·12	269·47	6·79
Aug.	4	1·29	315·42	2·27	34·19	2·20	·15	269·97	7·37
	9	1·75	316·40	+2·25	34·49	2·22	0·17	270·46	7·93

1905MNRAS..65..304C

Greenwich Mean Noon.	Light time.	Longitude of Central Meridian. I. 877°·90.	II. 870°·27.	Corr. for Phase.	A—O.	*B*.
1905.	m	°	°	°	°	°
Dec. 5	33·832	279·47	342·70	−0·03	286·89	+2·94
10	34·029	349·48	14·56	·06	287·33	2·93
15	34·286	59·41	46·35	·09	287·77	2·92
20	34·602	129·25	78·04	·14	288·21	2·92
25	34·971	199·00	109·64	·18	288·65	2·91
30	35·394	268·65	141·14	·23	289·10	2·90
1906.						
Jan. 4	35·864	338·20	172·54	·29	289·54	2·89
9	36·377	47·63	203·82	·34	289·98	2·88
14	36·927	116·96	235·01	·38	290·42	2·87
19	37·508	186·18	266·08	·43	290·87	2·87
24	38·118	255·30	297·06	·47	291·31	2·86
29	38·750	324·32	327·93	·50	291·75	2·85
Feb. 3	39·399	33·25	358·71	·53	292·19	2·84
8	40·061	102·09	29·41	·54	292·63	2·83
13	40·730	170·85	60·02	·55	293·06	2·82
18	41·403	239·53	90·55	·55	293·51	2·81
23	42·074	308·13	121·01	·55	293·94	2·80
28	42·739	16·68	151·41	·54	294·39	2·79
Mar. 5	43·397	85·16	181·74	·52	294·83	2·78
10	44·042	153·59	212·02	·50	295·27	2·77
15	44·670	221·97	242·26	·47	295·70	2·76
20	45·280	290·31	272·45	·44	296·14	2·75
25	45·868	358·62	302·61	·41	296·58	2·74
30	46·432	66·90	332·75	·37	297·01	2·73
Apr. 4	46·969	135·16	2·86	·33	297·45	2·72
9	47·477	203·40	32·95	·29	297·89	2·71
14	47·953	271·62	63·02	·26	298·33	2·70
19	48·397	339·83	93·09	·22	298·76	2·69
24	48·807	48·04	123·15	·18	299·21	2·67
29	49·181	116·24	153·21	·16	299·65	2·66
May 4	49·518	184·45	183·27	−0·12	300·08	2·65
July 15	49·922	16·65	186·10	+0·10	306·32	2·47
20	49·640	85·24	216·54	·13	306·75	2·46
25	49·322	153·86	247·02	·17	307·18	2·44
30	48·968	222·53	277·54	·20	307·62	2·43
Aug. 4	48·580	291·25	308·10	·24	308·05	2·42
9	48·160	0·03	338·72	+·28	308·48	+2·40

1905MNRAS..65..304C

Greenwich Mean Noon. 1906.		P.	L – O.	B.	Equat. Diam.	Excess over Polar.	Defect of Illum.	Q.	*d*.
		°	°	°	"	"	"	°	°
Aug.	14	2·20	317·36	+2·23	34·82	2·24	0·19	270·93	8·45
	19	2·62	318·28	2·21	35·18	2·26	·22	271·39	8·94
	24	3·03	319·16	2·19	35·56	2·29	·24	271·82	9·39
	29	3·42	320·00	2·17	35·98	2·31	·26	272·22	9·81
Sept.	3	3·79	320·80	2·15	36·42	2·34	·28	272·59	10·17
	8	4·14	321·55	2·13	36·89	2·37	·30	272·93	10·49
	13	4·46	322·24	2·11	37·38	2·41	·33	273·25	10·76
	18	4·75	322·88	2·09	37·90	2·44	·35	273·54	10·98
	23	5·02	323·47	2·08	38·45	2·48	·36	273·80	11·13
	28	5·25	323·98	2·06	39·02	2·51	·37	274·04	11·22
Oct.	3	5·46	324·43	2·04	39·61	2·55	·38	274·25	11·24
	8	5·63	324·81	2·03	40·23	2·59	·38	274·44	11·19
	13	5·77	325·12	2·02	40·86	2·63	·38	274·60	11·08
	18	5·87	325·35	2·01	41·50	2·67	·37	274·72	10·88
	23	5·94	325·50	2·00	42·14	2·71	·36	274·82	10·60
	28	5·97	325·56	1·99	42·79	2·75	·34	274·86	10·24
Nov.	2	5·96	325·54	1·98	43·43	2·80	·32	274·87	9·79
	7	5·92	325·44	1·98	44·06	2·84	·29	274·84	9·27
	12	5·84	325·26	1·97	44·68	2·88	·26	274·79	8·66
	17	5·72	325·00	1·97	45·26	2·91	·22	274·71	7·98
	22	5·56	324·65	1·97	45·80	2·95	·19	274·60	7·21
	27	5·37	324·24	1·97	46·29	2·98	·15	274·46	6·37
Dec.	2	5·15	323·75	1·97	46·74	3·01	·11	274·31	5·46
	7	4·91	323·21	1·97	47·11	3·03	·07	274·15	4·50
	12	4·64	322·62	1·97	47·41	3·05	·04	273·98	3·49
	17	4·35	321·99	1·97	47·63	3·07	·02	273·88	2·43
	22	4·04	321·33	1·97	47·77	3·08	·01	274·04	1·35
	27	3·73	320·65	1·97	47·81	3·08	·00	278·2	0·25
1907. Jan.	1	3·42	319·97	+1·97	47·76	3·08	0·00	91·10	0·85

1905MNRAS..65..304C

Greenwich Mean Noon.		Light time.	Longitude of Central Meridian. I. 877°·90.	II. 870°·27.	Corr. for Phase.	A—O.	B.
1906.		m	°	°	°	°	°
Aug.	14	47·708	68·85	9·39	+0·31	308·91	+2·39
	19	47·225	137·72	40·11	·35	309·34	2·37
	24	46·715	206·65	70·89	·38	309·77	2·36
	29	46·178	275·64	101·72	·42	310·19	2·34
Sept.	3	45·619	344·68	132·61	·45	310·63	2·33
	8	45·040	53·79	163·57	·48	311·06	2·31
	13	44·442	122·96	194·59	·50	311·49	2·30
	18	43·829	192·18	225·66	·53	311·91	2·28
	23	43·203	261·48	256·80	·54	312·34	2·27
	28	42·570	330·85	288·02	·55	312·76	2·25
Oct.	3	41·932	40·30	319·31	·55	313·19	2·24
	8	41·294	109·80	350·66	·55	313·62	2·22
	13	40·660	179·38	22·09	·54	314·05	2·20
	18	40·034	249·03	53·59	·52	314·47	2·19
	23	39·420	318·76	85·16	·49	314·90	2·17
	28	38·822	28·56	116·81	·46	315·32	2·16
Nov.	2	38·246	98·43	148·53	·42	315·75	2·14
	7	37·699	168·36	180·31	·37	316·17	2·12
	12	37·183	238·36	212·15	·33	316·60	2·11
	17	36·704	308·42	244·05	·28	317·02	2·09
	22	36·268	18·53	276·01	·23	317·45	2·07
	27	35·881	88·68	308·01	·18	317·87	2·06
Dec.	2	35·543	158·87	340·05	·13	318·29	2·04
	7	35·261	229·09	12·12	·09	318·71	2·02
	12	35·037	299·31	44·19	·05	319·14	2·01
	17	34·876	9·54	76·27	+ ·03	319·56	1·99
	22	34·779	79·76	108·33	·00	319·98	1·97
	27	34·747	149·96	140·38	·00	320·40	1·95
1907. Jan.	1	34·781	220·12	172·39	+0·00	320·82	+1·94

The following is a list of the Greenwich Mean Times when the adopted zero-meridians of the two systems will pass the middle of the illuminated disc, and the intervals between successive passages, to facilitate the determination of intermediate ones :—

1905MNRAS..65..304C

SYSTEM I.

1905.	d	h	m	Interval between Passages 9^{h}+ m	1905.	d	h	m	Interval between Passages 9^{h}+ m	1905.	d	h	m	Interval between Passages 9^{h}+ m
June	8	1	43·43	50·63	Aug.	22	22	39·73	50·52	Nov.	6	19	13·73	
	10	2	56·55			24	23	52·30			8	20	25·76	
	12	4	9·66			27	1	4·86			10	21	37·79	
	14	5	22·76			29	2	17·40			12	22	49·82	50·41
	16	6	35·84			31	3	29·92			15	0	1·85	
	18	7	48·91	50·61	Sept.	2	4	42·42			17	1	13·88	
	20	9	1·97			4	5	54·90			19	2	25·92	
	22	10	15·02			6	7	7·36			21	3	37·97	
	24	11	28·05			8	8	19·81			23	4	50·02	
	26	12	41·08			10	9	32·24			25	6	2·08	
	28	13	54·09	50·60		12	10	44·65	50·48		27	7	14·15	
	30	15	7·09			14	11	57·04			29	8	26·23	
July	2	16	20·07			16	13	9·42		Dec.	1	9	38·31	
	4	17	33·04			18	14	21·77			3	10	50·40	50·43
	6	18	45·99			20	15	34·12			5	12	2·54	
	8	19	58·93			22	16	46·45			7	13	14·71	
	10	21	11·86			24	17	58·76			9	14	26·91	
	12	22	24·78	50·58		26	19	11·05			11	15	39·13	
	14	23	37·67			28	20	23·33			13	16	51·37	
	17	0	50·55			30	21	35·59			15	18	3·63	
	19	2	3·42		Oct.	2	22	47·83	50·45		17	19	15·91	
	21	3	16·27			5	0	0·05			19	20	28·22	
	23	4	29·10			7	1	12·26			21	21	40·56	
	25	5	41·92			9	2	24·45			23	22	52·93	50·48
	27	6	54·73			11	3	36·62			26	0	5·33	
	29	8	7·52			13	4	48·78			28	1	17·77	
	31	9	20·29			15	6	0·92			30	2	30·23	
Aug.	2	10	33·05	50·55		17	7	13·05		1906. Jan.	1	3	42·72	
	4	11	45·79			19	8	25·17			3	4	55·23	
	6	12	58·51			21	9	37·27			5	6	7·77	
	8	14	11·22			23	10	49·37	50·42		7	7	20·34	
	10	15	23·92			25	12	1·44			9	8	32·94	
	12	16	36·60			27	13	13·50			11	9	45·57	
	14	17	49·26			29	14	25·55			13	10	58·23	50·54
	16	19	1·90			31	15	37·60			15	12	10·92	
	18	20	14·53		Nov.	2	16	49·65			17	13	23·64	
	20	21	27·14			4	18	1·69			19	14	36·39	

1905MNRAS..65..304C

System I.

1906. d	h	m	Interval between Passages 9^h+ m	1906. d	h	m	Interval between Passages 9^h+ m	1906. d	h	m	Interval between Passages 9^h+ m
Jan. 21	15	49·17		Apr. 9	14	8·08		Sept. 4	15	46·61	
23	17	1·97		11	15	21·42		6	16	59·35	
25	18	14·79		13	16	34·76		8	18	12·08	
27	19	27·64		15	17	48·10		10	19	24·79	
29	20	40·51		17	19	1·44		12	20	37·49	
31	21	53·40		19	20	14·78		14	21	50·17	50·54
Feb. 2	23	6·32	50·59	21	21	28·13		16	23	2·83	
5	0	19·26		23	22	41·48		19	0	15·48	
7	1	32·22		25	23	54·83	50·67	21	1	28·11	
9	2	45·21		28	1	8·18		23	2	40·72	
11	3	58·22		30	2	21·53		25	3	53·31	
13	5	11·24		May 2	3	34·88		27	5	5·89	
15	6	24·28		4	4	48·23		29	6	18·45	
17	7	37·34		July 15	9	23·14	50·62	Oct. 1	7	30·99	
19	8	50·42		17	10	36·25		3	8	43·51	
21	10	3·52		19	11	49·34		5	9	56·01	50·50
23	11	16·63	50·62	21	13	2·41		7	11	8·50	
25	12	29·76		23	14	15·47		9	12	20·97	
27	13	42·91		25	15	28·52		11	13	33·42	
Mar. 1	14	56·07		27	16	41·56		13	14	45·85	
3	16	9·24		29	17	54·59		15	15	58·27	
5	17	22·42		31	19	7·60		17	17	10·66	
7	18	35·61		Aug. 2	20	20·60		19	18	23·04	
9	19	48·82		4	21	33·58	50·59	21	19	35·41	
11	21	2·05		6	22	46·55		23	20	47·76	
13	22	15·29		8	23	59·51		25	22	0·09	50·46
15	23	28·53	50·65	11	1	12·45		27	23	12·40	
18	0	41·78		13	2	25·38		30	0	24·70	
20	1	55·04		15	3	38·29		Nov. 1	1	36·98	
22	3	8·31		17	4	51·18		3	2	49·23	
24	4	21·60		19	6	4·07		5	4	1·46	
26	5	34·89		21	7	16·94		7	5	13·68	
28	6	48·18		23	8	29·80		9	6	25·89	
30	8	1·48		25	9	42·64	50·57	11	7	38·08	
Apr. 1	9	14·79		27	10	55·46		13	8	50·26	
3	10	28·11		29	12	8·27		15	10	2·42	50·43
5	11	41·43	50·66	31	13	21·07		17	11	14·56	
7	12	54·75		Sept. 2	14	33·85		19	12	26·68	

1905MNRAS..65..304C

System I.

1906. d	h	m	Interval between Passages 9^h+ m	1906. d	h	m	Interval between Passages 9^h+ m	1906. d	h	m	Interval between Passages 9^h+ m
Nov. 21	13	38·80		Dec. 5	22	3·32	50·43	Dec. 20	6	27·54	
23	14	50·90		7	23	15·37		22	7	39·57	
25	16	2·99		10	0	27·41		24	8	51·61	
27	17	15·07		12	1	39·44		26	10	3·65	50·43
29	18	27·14		14	2	51·46		28	11	15·71	
Dec. 1	19	39·21		16	4	3·48		30	12	27·78	
3	20	51·27		18	5	15·51		1907. Jan. 1	13	39·85	50·42

System II.

1905. d	h	m	m	1905. d	h	m	m	1905. d	h	m	m
June 8	1	49·78	55·81	Aug. 4	23	57·10		Oct. 1	21	51·73	
10	3	28·78		7	1	35·70		3	23	29·86	55·63
12	5	7·78		9	3	14·30		6	1	7·96	
14	6	46·77		11	4	52·89		8	2	46·06	
16	8	25·74		13	6	31·45		10	4	24·14	
18	10	4·70	55·79	15	8	10·01		12	6	2·19	
20	11	43·65		17	9	48·54		14	7	40·24	
22	13	22·58		19	11	27·05		16	9	18·26	
24	15	1·50		21	13	5·55		18	10	56·28	
26	16	40·41		23	14	44·03	55·70	20	12	34·28	
28	18	19·31	55·78	25	16	22·48		22	14	12·27	
30	19	58·20		27	18	0·93		24	15	50·25	55·60
July 2	21	37·07		29	19	39·36		26	17	28·21	
4	23	15·93		31	21	17·77		28	19	6·16	
7	0	54·77		Sept. 2	22	56·16		30	20	44·09	
9	2	33·59		5	0	34·52		Nov. 1	22	22·03	
11	4	12·41		7	2	12·87		3	23	59·96	
13	5	51·32	55·76	9	3	51·20		6	1	37·89	
15	7	30·10		11	5	29·52		8	3	15·82	
17	9	8·87		13	7	7·82	55·66	10	4	53·73	
19	10	47·63		15	8	46·09		12	6	31·65	
21	12	26·36		17	10	24·36		14	8	9·56	55·59
23	14	5·08		19	12	2·60		16	9	47·48	
25	15	43·79		21	13	40·83		18	11	25·40	
27	17	22·48		23	15	19·05		20	13	3·32	
29	19	1·16		25	16	57·24		22	14	41·26	
31	20	39·82		27	18	35·42		24	16	19·19	
Aug. 2	22	18·47	55·73	29	20	13·59		26	17	57·14	

1905MNRAS..65..304C

SYSTEM II.

1905.	d	h	m	Interval between Passages 9^h+ m	1906.	d	h	m	Interval between Passages 9^h+ m	1906.	d	h	m	Interval between Passages 9^h+ m
Nov.	28	19	35·10		Feb.	13	8	17·38		Apr.	30	21	25·90	
	30	21	13·06			15	9	56·32		May	2	23	5·16	
Dec.	2	22	51·03			17	11	35·27			5	0	44·41	55·85
	5	0	29·00	55·61		19	13	14·24						
	7	2	7·03			21	14	53·23		July	15	4	47·64	55·80
	9	3	45·09			23	16	32·24			17	6	26·64	
	11	5	23·17			25	18	11·26	55·80		19	8	5·62	
	13	7	1·28			27	19	50·30			21	9	44·59	
	15	8	39·40		Mar.	1	21	29·36			23	11	23·54	
	17	10	17·55			3	23	8·43			25	13	2·48	
	19	11	55·71			6	0	47·52			27	14	41·42	
	21	13	33·91			8	2	26·61			29	16	20·34	
	23	15	12·14			10	4	5·70			31	17	59·24	
	25	16	50·39	55·66		12	5	44·81		Aug.	2	19	38·13	
	27	18	28·68			14	7	23·94			4	21	17·01	55·77
	29	20	7·00			16	9	3·09			6	22	55·87	
	31	21	45·35			18	10	42·24	55·83		9	0	34·73	
1906. Jan.	2	23	23·72			20	12	21·40			11	2	13·56	
	5	1	2·12			22	14	0·57			13	3	52·38	
	7	2	40·54			24	15	39·74			15	5	31·19	
	9	4	19·00			26	17	18·93			17	7	9·97	
	11	5	57·51			28	18	58·13			19	8	48·75	
	13	7	36·05			30	20	37·32			21	10	27·52	
	15	9	14·62	55·72	Apr.	1	22	16·53			23	12	6·27	
	17	10	53·22			3	23	55·75			25	13	45·00	55·75
	19	12	31·85			6	1	34·97			27	15	23·72	
	21	14	10·52			8	3	14·19	55·84		29	17	2·42	
	23	15	49·22			10	4	53·42			31	18	41·11	
	25	17	27·93			12	6	32·66		Sept.	2	20	19·78	
	27	19	6·66			14	8	11·90			4	21	58·43	
	29	20	45·42			16	9	51·15			6	23	37·06	
	31	22	24·21			18	11	30·40			9	1	15·68	
Feb.	3	0	3·01			20	13	9·65			11	2	54·27	
	5	1	41·84	55·77		22	14	48·89			13	4	32·86	
	7	3	20·69			24	16	28·14			15	6	11·43	55·72
	9	4	59·56			26	18	7·40			17	7	49·98	
	11	6	38·46			28	19	46·65	55·85		19	9	28·52	

Z

1905MNRAS..65..304C

SYSTEM II.

1906.	d	h	m	Interval between Passages $9^h +$ m	1906.	d	h	m	Interval between Passages $9^h +$ m	1906.	d	h	m	Interval between Passages $9^h +$ m
Sept.	21	11	7·04		Oct.	26	14	59·07	55·64	Nov.	30	18	46·04	
	23	12	45·54			28	16	37·26		Dec.	2	20	23·98	
	25	14	24·01			30	18	15·43			4	22	1·92	
	27	16	2·48		Nov.	1	19	53·59			6	23	39·84	55·61
	29	17	40·93			3	21	31·72			9	1	17·77	
Oct.	1	19	19·36			5	23	9·83			11	2	55·68	
	3	20	57·77			8	0	47·93			13	4	33·59	
	5	22	36·16	55·68		10	2	26·01			15	6	11·48	
	8	0	14·54			12	4	4·08			17	7	49·38	
	10	1	52·89			14	5	42·14			19	9	27·28	
	12	3	31·23			16	7	20·18	55·61		21	11	5·19	
	14	5	9·55			18	8	58·19			23	12	43·10	
	16	6	47·85			20	10	36·19			25	14	21·01	
	18	8	26·12			22	12	14·19			27	15	58·91	55·60
	20	10	4·38			24	13	52·17			29	17	36·84	
	22	11	42·63			26	15	30·14			31	19	14·79	55·60
	24	13	20·86			28	17	8·09						

The quantities in the ephemeris are to be interpolated directly for the times for which they are required, the equation of light having been already applied.

The position of *Jupiter's* north pole is assumed to be R.A. $17^h\, 51^m\, 59^s{\cdot}13$, N.P.D. $25°\, 26'\, 14''{\cdot}1$, R.A. $17^h\, 51^m\, 59^s{\cdot}60$, N.P.D. $25°\, 26'\, 15''{\cdot}1$ at the beginning of 1905, 1907 respectively.

P denotes the position-angle of the northern extremity of *Jupiter's* axis, reckoned eastward from the northernmost point of the disc.

$L - O + 180°$, $\Lambda - O + 180°$ are the jovicentric right ascensions of the Earth and Sun respectively, reckoned in the plane of the planet's equator from O, the point of the vernal equinox of *Jupiter's* northern hemisphere ; B *B* are the jovicentric declinations of the Earth and Sun above the planet's equation.

The adopted values of the diameters at distance 5·20 are: Equatorial $38''{\cdot}419$; Polar $35''{\cdot}945$.

The assumed time for light to traverse the unit distance is $498^s{\cdot}92$, this being the same value as that used by Mr. Marth.

d denotes the jovicentric angle between the Earth and Sun.

Q denotes the position-angle of the point of greatest defect of illumination, and is reckoned eastward from the northernmost point of the disc. It also gives the position-angle of the shadows of the satellites measured from the satellites themselves.

1905MNRAS..65..304C

If we call B″ the jovigraphical latitude of the centre of the disc, then $B'' = \left(\frac{a}{b}\right)^2 B = \left(\frac{15\cdot53}{14\cdot53}\right)^2 B$.

The longitudes of *Jupiter's* central meridian are computed with unaltered values of the rates of rotation and of the zero meridians in the two adopted systems. The addition of the "Corr. for Phase" gives the longitudes of the meridians which bisect the illuminated disc.

The sidereal periods of rotation corresponding to the two adopted systems are $9^h\ 50^m\ 30^s{\cdot}004$, $9^h\ 55^m\ 40^s{\cdot}632$.

Every fifth transit of each zero meridian across the centre of the illuminated disc is given; any intermediate transit may be found by applying once or twice the interval between successive transits, this interval being also tabulated.

The continuation of this ephemeris is given in the *Nautical Almanac* for 1907, the same elements being used there except the equatorial and polar diameters and the light-time, which are altered to accord with those used elsewhere in the *Nautical Almanac.*

There will be a transit of the Earth across the Sun's disc as seen from *Jupiter* on 1906 December 27. For an observer at *Jupiter's* centre the Earth's centre would enter on the Sun's disc Dec. $27^d\ 21^h\ 49^m$ G.M.T., and would leave the Sun's disc Dec. $28^d\ 8^h\ 33^m$ G.M.T.; the least distance of centres would be Dec. $28^d\ 3^h\ 11^m$, when the Earth's centre would be $67''{\cdot}5$ north of the Sun's centre; the Sun's semi-diameter as seen from *Jupiter* would be $189''{\cdot}5$. The laws of recurrence of these transits were discussed in *Monthly Notices*, vol. lxi. 2, p. 117.

Satellite I. transits the disc of *Jupiter*, Dec. $28^d\ 12^h$, and the satellite will then partially occult its own shadow.

Benvenue, 55 *Ulundi Road, Blackheath, S.E.:*
1905 *January* 7.

Ephemeris for Physical Observations of Saturn, 1905–6–7.

By A. C. D. Crommelin.

Paris Midnight.	Light Time.	Longitude of Central Meridian.		G.M.T. of Preceding Transit of Zero Meridian.					
		I. 843°·750.	II. 812°·641.	System I.			System II.		
1905.	m	°	°	h	m		h	m	
May 28	80·60	155·80	77·39	7	24·77	12	9	33·53	11
June 2	...	54·85	180·88	10	17·05	11	6	30·16	11
7	79·23	313·93	284·40	2	54·92	12	3	26·47	12
12	...	213·04	27·95	5	47·09	12	11	1·13	11
17	77·91	112·18	131·53	8	39·22	12	7	57·60	11
22	...	11·33	235·13	11	31·32	11	4	54·04	11
27	76·70	270·51	338·74	4	9·03	12	1	50·46	12

1905MNRAS..65..304C

Paris Midnight.	Light Time.	Longitude of Central Meridian.		G.M.T. of Preceding Transit of Zero Meridian.					
		I. 843°·750.	II. 812°·641.	System I.			System II.		
1905.	m	°	°	h	m		h	m	
July 2	...	169·71	82·38	7	1·04	12	9	24·69	11
7	75·60	68·92	186·03	9	53·04	11	6	21·05	11
12	...	328·14	289·69	2	30·69	12	3	17·39	12
17	74·66	227·36	33·36	5	22·68	12	10	51·54	11
22	...	126·58	137·03	8	14·65	12	7	47·86	11
27	73·93	25·79	240·69	11	6·64	11	4	44·20	11
Aug. 1	...	285·00	344·35	3	44·30	12	1	40·52	12
6	73·40	184·19	87·99	6	36·34	12	9	14·71	11
11	...	83·36	191·61	9	28·40	11	6	11·16	11
16	73·11	342·51	295·21	2	6·15	12	3	8·14	12
21	...	241·62	38·78	4	58·33	12	10	41·94	11
26	73·08	140·70	142·32	7	50·55	12	7	38·48	11
31	...	39·75	245·82	10	42·82	11	4	35·08	11
Sept. 5	73·28	298·76	349·28	3	20·81	12	1	31·76	12
10	...	197·71	92·70	6	13·24	12	9	6·39	11
15	73·74	96·61	196·06	9	5·77	11	6	3·24	11
20	...	355·46	299·37	1	44·03	12	3	0·19	12
25	74·42	254·26	42·63	4	36·72	12	10	35·11	11
30	...	152·99	145·83	7	29·55	12	7	32·23	11
Oct. 5	75·32	51·67	248·97	10	22·47	11	4	29·47	11
10	...	310·30	352·07	3	1·07	12	1	26·76	12
15	76·36	208·87	95·11	5	54·17	12	9	2·11	11
20	...	107·38	198·08	8	47·38	12	5	59·62	11
25	77·57	5·83	301·00	11	40·70	11	2	57·24	12
30	...	264·23	43·87	4	19·67	12	10	32·93	11
Nov. 4	78·88	162·58	146·69	7	13·15	12	7	30·69	11
9	...	60·88	249·46	10	6·73	11	4	28·56	11
14	80·24	319·14	352·19	2	45·93	12	1	26·49	12
19	...	217·35	94·87	5	39·66	12	9	2·52	11
24	81·62	115·53	197·52	8	33·47	12	6	0·59	11
29	...	13·67	300·13	11	27·32	11	2	58·73	12
Dec. 4	82·97	271·79	42·72	4	6·74	12	10	34·95	11
9	...	169·89	145·28	7	0·67	12	7	33·17	11
14	84·25	67·96	247·82	9	54·65	11	4	31·45	11
19	...	326·00	350·34	2	34·20	12	1	29·74	12
24	85·47	224·04	92·84	5	28·22	12	9	6·11	11
29	...	122·07	195·34	8	22·29	12	6	4·45	11
1906.									
Jan. 3	86·54	20·09	297·83	11	16·36	11	3	2·80	12

1905MNRAS..65..304C

Paris Midnight.		Light Time.	Longitude of Central Meridian.		G.M.T. of Preceding Transit of Zero Meridian.					
			I. 843°·750.	II. 812°·641.	System I.			System II.		
1906.		m	°	°	h	m		h	m	
Jan.	8	...	278·12	40·32	3	55·93	12	10	39·19	11
	13	87·46	176·16	142·82	6	49·96		7	37·54	
June	2	80·85	212·42	143·68	5	48·14	12	7	36·07	11
	7	...	111·42	247·13	8	40·51	12	4	32·77	11
	12	79·45	10·45	350·60	11	32·82	11	1	29·44	12
	17	...	269·51	94·10	4	10·72	12	9	3·91	11
	22	78·09	168·60	197·63	7	2·93	12	6	0·49	11
	27	...	67·72	301·19	9	55·08	11	2	56·99	12
July	2	76·79	326·87	44·77	2	32·85	12	10	31·33	11
	7	...	226·03	148·37	5	24·94	12	7	27·77	11
	12	75·60	125·21	252·00	8	16·99	12	4	24·15	11
	17	...	24·42	355·64	11	8·97	11	1	20·53	12
	22	74·52	283·63	99·30	3	46·65	12	8	54·71	11
	27	...	182·84	202·96	6	38·64	12	5	51·05	11
Aug.	1	73·64	82·06	306·63	9	30·62	11	2	47·36	12
	6	...	341·28	50·29	2	8·26	12	10	21·55	11
	11	72·94	240·49	153·95	5	0·27	12	7	17·88	11
	16	...	139·69	257·60	7	52·28	12	4	14·23	12
	21	72·46	38·87	1·23	10	44·32	11	11	48·47	11
	26	...	298·02	104·84	3	22·08	12	8	44·89	11
	31	72·24	197·15	208·42	6	14·21	12	5	41·37	11
Sept.	5	...	96·26	311·97	9	6·38	11	2	37·88	12
	10	72·25	355·32	55·49	1	44·28	12	10	12·33	11
	15	...	254·34	158·97	4	36·60	12	7	8·97	11
	20	72·51	153·32	262·41	7	29·01	12	4	5·69	12
	25	...	52·25	5·79	10	21·48	11	11	40·39	11
	30	73·03	311·12	109·13	2	59·69	12	8	37·28	11
Oct.	5	...	209·94	212·41	5	52·36	12	5	34·27	11
	10	73·77	108·70	315·64	8	45·14	12	2	31·34	12
	15	...	7·41	58·82	11	38·00	11	10	6·43	11
	20	74·70	266·06	161·94	4	16·57	12	7	3·69	11
	25	...	164·66	265·00	7	9·63	12	4	1·05	12
	30	75·80	63·20	8·00	10	2·79	11	11	36·47	11
Nov.	4	...	321·68	110·95	2	41·63	12	8	34·03	11
	9	77·03	220·10	213·84	5	34·99	12	5	31·68	11
	14	...	118·48	316·68	8	28·43	12	2	29·44	12
	19	78·35	16·81	59·48	11	21·96	11	10	5·24	11

Paris Midnight.	Light Time.	Longitude of Central Meridian.		G.M.T. of Preceding Transit of Zero Meridian.					
		I. 843°·750.	II. 812°·641.	System I.			System II.		
1906.	m	°	°	h	m		h	m	
Nov. 24	...	275·08	162·23	4	1·14		7	3·15	
						12			11
29	79·72	173·32	264·94	6	54·83		4	1·12	
						12			12
Dec. 4	...	71·52	7·61	9	48·57		11	37·17	
						11			11
9	81·09	329·69	110·25	2	27·92		8	35·25	
						12			11
14	...	227·82	212·85	5	21·80		5	33·42	
						12			11
19	82·43	125·93	315·42	8	15·70		2	31·64	
						12			12
24	...	24·01	57·97	11	9·67		10	7·91	
						11			11
29	83·70	282·07	160·51	3	49·19		7	6·18	
						12			11
1907. Jan. 3	...	180·12	263·03	6	43·20		4	4·48	
						12			12
8	84·87	78·17	5·54	9	37·23		11	40·84	
						11			11
13	...	336·20	108·03	2	16·80		8	39·19	
						12			11
18	85·91	234·22	210·52	5	10·85		5	37·53	
						12			11
23	...	132·26	313·02	8	4·89		2	35·88	
						12			12
28	86·80	30·29	55·52	10	58·96		10	12·26	

The rotation times (viz. I. $10^{h}\ 14^{m}{\cdot}4$ for equatorial spots, and II. $10^{h}\ 37^{m}{\cdot}92$ for Barnard's white spot) and zero meridians have been continued unchanged from the previous ephemeris.

Paris Midnight* is chosen for the first three columns in order to utilise the data of the *Connaissance des Temps* without interpolation. The times of transit of zero meridian are in Greenwich Mean Time. The quantities are to be interpolated for the times for which they are required, the equation of light having been already applied. The small figures between the transits of zero meridian denote the number of intervening rotations, and the following table facilitates the determination of the times of intermediate transits. The argument is found by taking the difference of consecutive values of the longitude of central meridian; in taking the difference it is sufficient to look at the unit and first decimal figure.

	Increase of Central Meridian in 5 days.	6 Rotations.		5 Rotations.		4 Rotations.		3 Rotations.		2 Rotations.		1 Rotation.	
	°	h	m	h	m	h	m	h	m	h	m	h	m
System I.	4219·2	61	26·01	51	11·67	40	57·34	30	43·00	20	28·67	10	14·33
	4218·8		26·36		11·96		57·57		43·18		28·78		14·39
	4218·4		26·71		12·25		57·80		43·35		28·90		14·45
	4218·0		27·06		12·55		58·04		43·53		29·02		14·51
System II.	4063·7	63	47·06	53	9·21	42	31·37	31	53·53	21	15·68	10	37·84
	4063·3		47·43		9·53		31·62		53·72		15·81		37·90
	4062·9		47·81		9·84		31·87		53·90		15·94		37·97
	4062·5		48·18		10·15		32·12		54·09		16·06		38·03

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* That is $9^{m}\ 20^{s}{\cdot}9$ before Greenwich Midnight.

1905MNRAS..65..304C

The times of transit of zero meridian are given above for the true centre of the disc. If the times are required for the centre of the illuminated disc the following correction should be applied, being subtracted before opposition and added after it.

Days from Opposition.	Correction Min.	Days from Opposition.	Correction Min.	Days from Opposition.	Correction Min.
5	0·00	55	0·19	105	0·26
10	·01	60	·21	110	·24
15	·02	65	·23	115	·23
20	·04	70	·25	120	·21
25	·06	75	·26	125	·19
30	·08	80	·27	130	·17
35	·10	85	·28	135	·15
40	·12	90	·28	140	·12
45	·15	95	·27	145	·10
50	·17	100	·27	150	·08

Erratum in Mr. Franks's Paper.

Page 159, 6th line from bottom, *for* darkness *read* thickness.